

The linkages between antecedents, processes and outcomes of internship

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Abstract

Purpose – The purpose of this paper is to identify how different factors of antecedents and processes affect the outcomes of an internship, measured in terms of competency development.

Design/methodology/approach – The authors used an internship questionnaire designed for the University of Tartu in Estonia. Responses were obtained from 178 students across different disciplines – humanities and the arts, social sciences, natural sciences and medicine – who had recently taken an internship. Based on current academic literature, the authors create a three-level model: antecedents-processes-outcomes. The antecedents and processes were both differentiated into three factors and tested with a structural equation model.

Findings – The model demonstrates that there are different antecedents that have an effect on internship outcomes, but these only work through internship processes. For example, the objective of the internship and clarity of instructions will only have a positive effect if there is relevant support from the supervisor at the employing company and if the student can use the knowledge and skills gained at university.

Research limitations/implications – The study is based on survey data filled in by students, i.e. based on self-perception. Based on the results of the study, the authors claim that an active role and initiative-taking by students in finding suitable internships should be further encouraged.

Originality/value – Whilst previous studies have used a two-level model of internship (or a three-level model for students satisfaction as an outcome) the authors create and test a three-level model measuring competency development as the outcome of an internship.

Keywords Higher education, Internship outcomes, Skills, Competency, Implementability, Supervisor support
Paper type Research paper

1. Introduction

Internships form an integral part of people's studies — increasingly so in higher education. The question is, how should an internship be arranged so that it is a holistic and fruitful process? Different authors acknowledge the role of three parties in an internship – the student, the university and the company (Narayanan *et al.*, 2010; Maertz *et al.*, 2014; McHugh, 2017) – and the benefits for these parties. For companies, benefits are related to project completion, the inflow of ideas and potential recruitment (Gault *et al.*, 2010; Maertz *et al.*, 2014; Kroon and Franco, 2022). For students, an internship is a transition from academic studies to a work environment (della Volpe, 2017), improving skills and competencies (Sanahuja Véléz and Ribes Giner, 2015) or future job performance (Gault *et al.*, 2010), ensuring better employability (Knouse and Fontenot, 2008) and, due to their trial and error nature, internships contribute to more conscientious career choices (Maertz *et al.*, 2014). Universities benefit by increasing their visibility and reputation (Sanahuja Véléz and Ribes Giner, 2015) and



by fulfilling the need for experimental learning, which is difficult to deliver in the classroom (Maertz *et al.*, 2014).

The importance of internships in the higher education curricula is increasing around the world due to growing needs for practical skills. Scholarly literature does not provide a clear answer for what role different aspects play in the outcome of an internship. Furthermore, it is not clear how to measure internship outcomes in a way that provides beneficial feedback to all parties. For example, in scholarly literature, the outcome is typically measured through student satisfaction (Narayanan *et al.*, 2010; To and Lung, 2020) or dissatisfaction (Dommeyer *et al.*, 2016). However, the companies and universities might desire something more tangible or measurable as an outcome of the internship.

One option how to measure the outcome of an internship, is related to skills development. This has gained much less attention in scholarly literature compared to student satisfaction. Although there are some studies that analyse the skills obtained via an internship (e.g. della Volpe, 2017; Chen *et al.*, 2018; Nghia and Duyen, 2018; Teng *et al.*, 2019), they do not focus on the full process of the internship and factors that play a role at different stages. Furthermore, while knowledge and skills are considered something that can be taught in the classroom, we are interested in how these are applied in real-life situations of internship and advance the competency of the students. As demonstrated by Kotsiou *et al.* (2022) and Chan and Chen (2022), the term “skill” is often used as an umbrella term, comprising also attitudes, competency and knowledge. However, we have decided to use “competency” as the umbrella term for the outcome of internship, to acknowledge the importance of applying the skills in real-life situations. This is in line with interpretation provided by Hager and Gonczi (1996, p. 15), who have defined competence as “desirable attributes including knowledge of appropriate sorts, skills and abilities such as problem solving, analysis, communication, pattern recognition, etc. and attitudes of appropriate kinds”.

The objective of our study is to evaluate how the different factors of antecedents and processes affect the outcomes of an internship, measured through competency development. This study contributes to the existing scholarly literature by constructing a three-level model. Furthermore, the model is tested with the data from the University of Tartu, which includes students from different disciplines, typically present in a traditional university. In the next sections, we first give an overview of literature, structured by antecedents, process and outcomes of an internship. Then we provide our research model, which is based on the literature review. The methodology section presents the context of the University of Tartu, questionnaire used and describes the data. The last sections discuss the findings of the analysis and discussion.

2. Literature review

2.1 *The nature of an internship*

An internship is a form of experiential learning. As already described by Kolb (1984, p. 38), “learning is the process whereby knowledge is created through the transformation of experience”. One important element of experiential learning is reflection, as the experience alone is not sufficient (Frontczak, 1998). In addition, an internship helps to bridge the gap between classroom-based career expectations and the reality of employment (Gault *et al.*, 2010). Hence, experiential learning is based on the dual nature of action/reflection and experience/abstraction (Kolb and Kolb, 2017). Morris (2020, p. 1,071) specified the experiential learning cycle further, emphasising that “knowledge is situated in context” and it is not about just reflection, but about critical reflection. Although an internship is widely acknowledged as a form of integrating theory in practice during studies, it can also be criticised because it very often lacks the ill-defined problem solving, which is the core of managerial problems interns should learn, and reflection (Perusso and Baaken, 2020). What is also specific about an

internship is that it encompasses the activities of three parties – those of the intern, those of the university and those of the employer – and these roles might not be so well specified.

There is also a mixture of terms that are used in the context of learning and internship. A traditional approach is that the students gain knowledge and skills from (higher) educational system. However, how these skills and knowledge transfer to the workplace, is a complex matter, which needs integrated approach to learning in classroom and practical settings (Fleming *et al.*, 2021). Very often the term competency is also used, which includes knowledge, skills and attitudes, and also captures the potential to cope with unpredictable situations (Voogt and Roblin, 2012; Fuchs, 2022). As the world and labour market is changing very quickly, the term “future skills” are more and more discussed in the context of higher education studies. Future skills refer to knowledge, attitudes, values, skills and competencies that prepare students to manage uncertain and unpredictable situations, but there is wide variety of how the future skills are defined (Kotsiou *et al.*, 2022). The future skills are also called 21st century skills, and their focus is application in real-life context (Erickson and Oliveri, 2016). However, also a term “competency” is used in the context of how student is able to “choose and adapt from within the acquired processes those ones necessary to solve an unknown task or problem” (Fuchs, 2022, p. 2).

As such, it is a challenge to construct a model that reflects all the important parts of an internship and find relevant constructs, but in order to understand how the linkages between different factors work, this is essential. The most widely used model of the internship process is that of Narayanan *et al.* (2010), according to which the outcomes of an internship are affected by different antecedents and processes. We build our approach similarly, but we try to classify these broad groupings of antecedents, processes and outcomes into finer factors.

2.2 Antecedents of an internship

Before discussing the antecedents of an internship, we must first acknowledge that some of the factors affecting the outcome of an internship are difficult to classify as either antecedents or processes. For example, a positive internship experience plays a significant role in student satisfaction, but it is related to both antecedents (the task of internship assignment, assigned responsibilities, etc.) and the process (the internship was interesting and satisfying) (Jaradat, 2017). Some issues, such as the internship task and autonomy of the intern, can be considered before the internship, but some are clarified only in the process itself (e.g. does the intern really like the assignment provided?).

Previous research has shown that the presence and support of the supervisor are important factors influencing the outcome of an internship. Some studies concentrate more on supervisors in the company/organisation (Knouse and Fontenot, 2008; Paulins, 2008; McHugh, 2017; Bhattacharya and Neelam, 2018), and some on both those in the company and in the university (Narayanan *et al.*, 2010; Yoo and Morris, 2015; Neelam *et al.*, 2019). To and Lung (2020) found that the main predictor of internship outcome is supervisor support, and it also plays an important role in an intern’s demonstration of initiative. Chen *et al.* (2018) argued that administrative support for the internship also matters for the outcome: for example, faculty support to resolve disputes, and performance evaluation by the university. It has also been reported that interns might feel uncertainty before an internship due to a lack of information regarding the project or activities they will be part of. This can be managed by better communication between the intern and the company (Bhattacharya and Neelam, 2018). It has been suggested that university supervisors should actively assist and counsel students in their search for an internship (Yoo and Morris, 2015; Sosland and Lowenthal, 2017).

Based on these findings, supervisor issues can be divided into two. The first part relates to antecedents: more specifically, how clear the instructions for an internship are and whether

the supervisors (both academic and company) are set in place. The second part is related to the internship processes and how the supervisor provides feedback to the student.

Narayanan *et al.* (2010) emphasised that finding a challenging internship task is essential for a student's commitment to an internship, and that the learning outcomes are better if an internship is chosen by the student rather than designated by the university. It has been claimed that various aspects of internship tasks affect the internship outcome; for example, autonomy, task variety and task significance (Bhattacharya and Neelam, 2018) or task clarity (Kapareliotis *et al.*, 2019). Contrarily, some studies (McHugh, 2017; To and Lung, 2020) did not find a relationship between task clarity and the outcome of an internship. Paulins (2008) also found that it is important that the intern sees the big picture and how his/her work contributes to the company in order to ensure a better internship outcome. Personal interest, together with the desire to learn new things, is crucial for enhancing the internship experience (Zopiatis and Constanti, 2012). Part of the initiative taking is related to the intern's own characteristics, such as self-confidence, ability to comprehend the importance of lifelong learning, and the ability to transfer skills and knowledge to different contexts (Jackson, 2014). However, it also matters how well the student is able to apply these characteristics during the process. Greater dedication to the task and self-commitment during an internship lead to better outcomes (Chen *et al.*, 2018). To ensure better matchmaking in task characteristics and intern interests, universities should offer more holistic counselling for interns (Yoo and Morris, 2015).

Hence, based on the literature, we can conclude that there are three factors that can be distinguished amongst internship antecedents. Based on current literature, there are different options to understand how different items can be categorised as antecedents or processes (see Table 1 and Table A1). Firstly, there is **clarity of instructions**, which is related to the guidelines for the internship and supervisor presence. Secondly, there is **choice of internship**, which is specifically related to how well the intern has thought through the choice of internship. The third factor is **the tasks or objective of the internship**, which is about the objectives set by the intern. These antecedent factors could affect the outcome of an internship via process factors.

2.3 Internship processes

The processes are the most complicated issue to operationalise in terms of factors. Narayanan *et al.* (2010) consider the interactions between company, university and student as the process factor. However, we will here try to operationalise it further. For example, the length of the internship is highlighted as being important in the literature, and it has been suggested that an internship should be longer to achieve a better outcome (Vadi *et al.*, 2013; Jackling and Natoli, 2015), as it takes time to settle into an organisation.

Rogers *et al.* (2021) argued that unpaid interns will accomplish less with an internship compared to paid interns, because their work is not so structured, and they are not so well integrated into the working environment. In addition, effective planning and goal setting have been identified as important factors for a successful internship (Maertz *et al.*, 2014), and these can be classified as either antecedents and processes, as the set goal should be reviewed from time to time. Gault *et al.* (2010) found that the more that interns are able to exceed the expectations of the employer, the higher the salary is that the employer is willing to pay.

There are also different views regarding how classroom preparation affects the outcome. Neelam *et al.* (2019) found that classroom preparation does not affect the perceived value of an internship. Some studies have revealed that there are different perceptions about the preparation or characteristics of internship students; companies expect more autonomous students (della Volpe, 2017). The study by Jackling and Natoli (2015) about international student internships in Australia demonstrated that communication skills and awareness of

Author (year)	Country	Factors affecting internship outcome	→ Factor's items affiliation to antecedents/process	Outcome factor used
Narayanan <i>et al.</i> (2010)	Portugal	Advisor selection Project selection Faculty advisor role Project progress feedback	→ Antecedents (how the advisor was selected) → Antecedents (student initiated project selection) → Process (project understanding and interest, company communication) → Process (feedback given to the student about project progress)	Student satisfaction, project likelihood of implementation
Yoo and Morris (2015)	USA	Supervisor support Internship relevancy	→ Process (supervisor was helpful in getting the job done) → Process (relevancy to the area of study)	Internship satisfaction
Jaradat (2017)	Jordan	Positive experience	→ Antecedents (well-defined responsibilities) → Process (internship was interesting)	Internship satisfaction
McHugh (2017)	USA	Internship content	→ Antecedents (task clarity, autonomy) → Process (perceived supervisor support)	Internship satisfaction, job pursuit intentions
Chen <i>et al.</i> (2018)	Taiwan	Satisfaction with school Satisfaction with company	→ Antecedents (internship planning and assignment) → Process (educational training, reasonable conduct: how intern is treated in the company)	Employability, internship satisfaction
Neelam <i>et al.</i> (2019)	India	Supervisor-intern exchange Perceived value of academic preparation	→ Process (supporting and helpful supervisor) → Process (applying skills learnt in classroom to the work environment)	Value of internship experience
Kapareliotis <i>et al.</i> (2019)	Greece	Role clarity Ability Motivation	→ Antecedents (student knows what is expected from him/her) → Process (various skills obtained from education) → Process (intrinsic vs extrinsic motivation factors)	–
Nghia and Duyen (2018)	Vietnam	Initiative in search for internship	→ Antecedents (these who took the self-initiative, got better outcome)	Professional skills and knowledge
To and Lung (2020)	China	Supervisor support Task clarity Self-initiative behaviour	→ Process (feedback given) → Antecedents/process (work supervisor provided clear instructions/indicated whether I completed my jobs) → Process (taking initiative during internship)	Internship satisfaction

Table 1.
Factors affecting internship outcomes based on current literature

Source(s): Created by the authors

relevant business culture were not up to the level expected by companies. Whilst academic preparation is done before an internship, its real value and relevance appears only in the process of implementing these skills. Nghia and Duyen (2018) found in their study that internships helped students to change their attitude from learning-to-pass to learning-to-change skills, also demonstrating the interactivity of the process. Hence, we consider academic preparation a process factor, which reflects the process of how skills learnt during this preparation can be implemented. Such approach is also in line with the concept of competence or future skills, which acknowledge the importance of applying the skills and knowledge in real-life context (Erickson and Oliveri, 2016).

Derived from these ideas, we divide processes into three factors (more information about how the different factors are compiled based on literature, is provided in Table 1 and Table A1). The first factor relates to the **supervisor from the company**, which concerns how feedback is given by the supervisor (which was discussed above in relation to antecedents). The second factor concerns the **characteristics of the internship**, which covers the length and tasks of the internship. The third factor is **implementability of knowledge and skills** gained during studies at the university.

2.4 Internship outcomes

Different methods are used to measure internship outcomes or effectiveness. It can be measured through student satisfaction (Narayanan *et al.*, 2010; Bhattacharya and Neelam, 2018; To and Lung, 2020) or dissatisfaction (Dommeyer *et al.*, 2016), enhanced employability (Knouse and Fontenot, 2008) or skills development (McHugh, 2017; Anjum, 2020). Narayanan *et al.* (2010) and Sanahuja Vélaz and Ribes Giner (2015) pointed out that the student internship experience, in terms of outcomes, can be divided into primary (immediately after the internship) and longer-term outcomes. The initial outcome of the internship is mainly related to skills development and immediate career opportunities. Longer-term outcomes are related to better career decisions and career prospects in the future. The content of “skills” is also something that can vary. Many studies mention cross-skills or general skills like critical thinking; problem solving; teamwork; IT or computer skills; or language and communication skills (Knouse and Fontenot, 2008; Dommeyer *et al.*, 2016; della Volpe, 2017; Chen *et al.*, 2018; Marks *et al.*, 2018; Kapareliotis *et al.*, 2019). Some studies have highlighted professional skills (della Volpe, 2017; Chen *et al.*, 2018; Nghia and Duyen, 2018; Anjum, 2020), referring to skills that are specific to a certain profession. Whilst employers value social skills very highly, academic supervisors value these much less (Urquía-Grande and Pérez Estébanez, 2020). Interns value the development of interpersonal skills more than technical skills during their internship (Zehr and Korte, 2020). Companies rate interns’ skills relating to problem solving and initiative taking lower than interns do themselves (Marks *et al.*, 2018). As demonstrated by Teng *et al.* (2019), skills development has a positive effect on a student’s preparedness for employment, and these skills mainly include the general skills named above. In addition, it can be noted that several cross-skills or general skills are also called future skills or 21st century skills in scholarly literature. As a term, “skills” can be misleading, because the term “future skills” is more used in the context of competency (Kotsiou *et al.*, 2022). We will use the term “competency” as the outcome of internship, which captures development of various skills in the context of internship. As suggested already by Hager and Goncz (1996), competence forms only when person’s abilities are linked with appropriate tasks. Hence, this can be inferred from performance, which occurs in working environment, and the model with different stages can help us understand this process.

2.5 Research model

Based on the literature, we have classified antecedents into three factors: clarity of instructions, choice of internship and the objective of the internship (how the internship task

has been specified). Regarding the processes, we have also classified these into three factors: supervisor from the company, characteristics of the internship and implementability of knowledge and skills. These are constructs that can be measured only during the process; for example, it is not about whether the supervisor is in place or not, but whether the intern gets regular feedback about the work. The outcomes of the internship are evaluated in terms of competency development, which we measure by advancement of different skills. These factors are demonstrated also on [Figure 1](#).

The specific variables were operationalised by the internship questionnaire. The internship questionnaire is part of long-term process at the University of Tartu; this questionnaire has already been used as a basis to develop an internship feedback questionnaire, which students will have to fill in when completing an internship. Hence, various references already cited in the literature review were used as sources for question phrasing, but during the process, various university institutes with the relevant staff contributed to the specific wording of questions. The final questionnaire can be seen in [Table A2](#). For antecedents and processes factors, there were typically three claims per factor, but for outcomes in terms of competency development, 11 different claims were used.

Based on the literature and how the factors were specified, we have developed 12 hypotheses ([Figure 2](#)). The first nine hypotheses describe the relationships between different antecedents and internship process factors:

- H1.* The clarity of instructions is positively related to the activities of the supervisor from the company.
- H2.* The clarity of instructions is positively related to the characteristics of the internship.
- H3.* The clarity of instructions is positively related to the implementability of knowledge.
- H4.* The choice of the internship is positively related to the activities of the supervisor from the company.
- H5.* The choice of the internship is positively related to the characteristics of the internship.

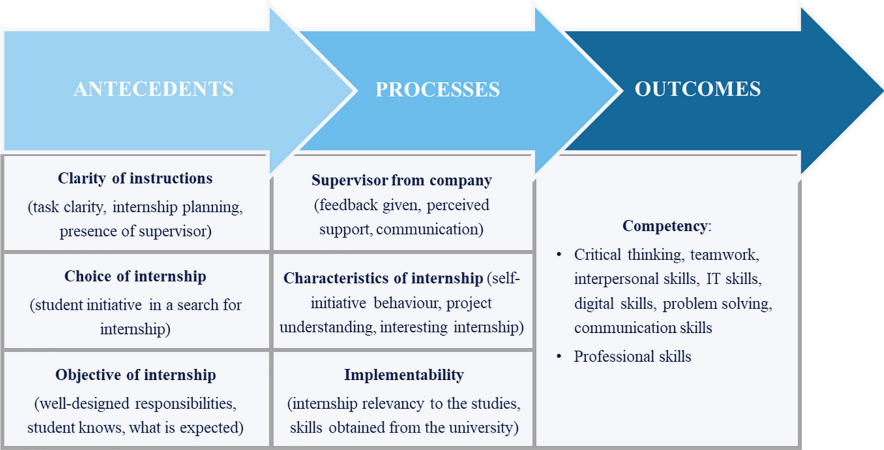
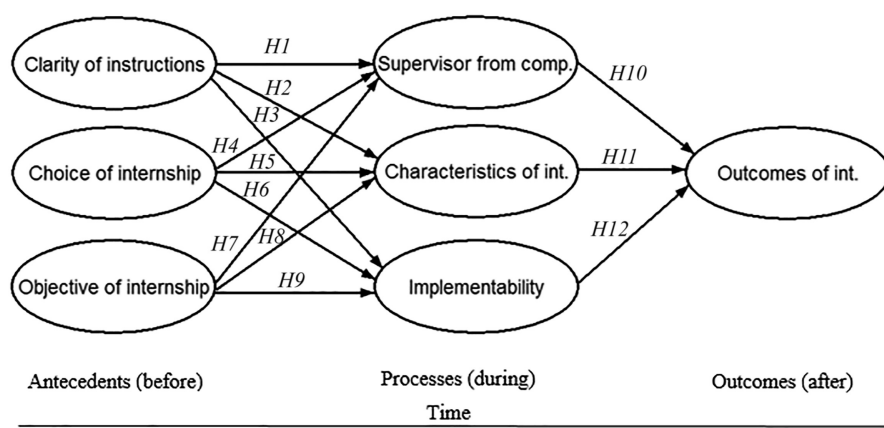


Figure 1.
The alignment of different factors highlighted in current literature into antecedents, processes and outcomes

Source(s): Created by the authors



Source(s): Created by the authors

Figure 2.
The model used for
evaluation of the
factors affecting the
outcomes of the
internship

H6. The choice of the internship is positively related to the implementability of knowledge.

H7. The objective of the internship is positively related to the activities of the supervisor from the company.

H8. The objective of the internship is positively related to the characteristics of the internship.

H9. The objective of the internship is positively related to the implementability of knowledge.

Three hypotheses were stated as a means to control whether or not the process (consisting of three different factors) is related to the outcome:

H10. The activities of the supervisor from the company are positively related to the outcomes of the internship.

H11. The characteristics of the internship are positively related to the outcomes of the internship.

H12. The implementability of knowledge is positively related to the outcomes of the internship.

3. Methodology

This study was conducted in University of Tartu, which is the oldest and largest university in Estonia, offering programmes in various disciplines, from humanities to medicine. Estonian higher education regulations do not set specific rules for internships. However, to ensure the better preparedness of students for work life, the University of Tartu decided that from 2020/21, internships are included in every bachelor and master's level programme, but very often as an elective non-compulsory course. Similar to trends in other European countries, students in Estonia who have taken internships feel that they are better prepared for the labour market as compared to students who have not taken an internship (Wartenbergh-Cras, 2021). However, according to the feedback given by alumni of Estonian higher education

institutions between 2016 and 2018, almost half considered that their completed studies did not include enough internship opportunities ([Ministry of Education and Research and Ernst and Young, 2020](#)).

Regardless of the acknowledged importance of internships, very few studies have been conducted about them in the context of higher education in Estonia. Some reports have highlighted the need to increase internship length, to ensure more significant support and readiness of supervisors, to pay more attention to goal setting and to provide more internship opportunities and types ([Vadi et al., 2013](#); [Luhtaru and Ode, 2017](#)). In 2017, an internship audit was performed at the University of Tartu in which the following key issues were highlighted: inconsistency in the collection of feedback; poor understanding of the factors influencing the quality of the internship; and the unclear role of supervision and internship outcomes. These issues are on the agenda for many academic universities, regardless of the country or culture. In order to understand, how internships develop the skills of the students, the internship feedback questionnaire was developed by the university; this provides the data used in this study.

The questionnaire was distributed to University of Tartu students from November 2020 to January 2021. The University of Tartu has about 13,600 students, but the aim of this questionnaire was to target only those students who had taken an internship sometime between April and December 2020. To ensure the participation of students from different disciplines, the questionnaire was distributed through internship coordinators from different disciplines. Altogether, 178 students from a wide array of disciplines responded (see [Table 2](#)). The students from humanities were slightly underrepresented; this might be related to the fact that although the internship is included in the curriculum, it might not be an obligatory course for the students, but an optional one. The students from natural sciences and medicine are slightly overrepresented, as students from these disciplines are very likely to take an internship. In addition, bachelor-level students were underrepresented and master-level students were overrepresented, which may be a result of the greater interest and willingness of master-level students to provide feedback as a way of contributing to the improvement of university systems.

Altogether, there were 32 statements in the questionnaire, divided into three large blocks, related to internship antecedents, processes and outcomes. The responses were provided on a Likert scale as follows: Agree (4); Rather agree (3); Rather disagree (2); Disagree (1). In addition, a “Not applicable” option was also offered.

We use structural equation model (hereinafter SEM), which enables us to analyse different latent variables and relationships. We estimate the relationships between antecedents, the processes and the outcomes of the internship. As the first step of the SEM, a confirmatory

Table 2.
Sample characteristics
and comparison to UT
students' general
numbers

Variable	Number of respondents (%)	Total % of students at UT
<i>Discipline</i>		
Social sciences	79 (45)	45
Natural sciences	50 (28)	23
Medicine	36 (20)	15
Humanities	13 (7)	17
<i>Study level</i>		
Bachelor	74 (42)	66
Master	104 (58)	34

Source(s): Calculated by the authors based on questionnaire responses and [UT statistics \(2022\)](#)

factor analysis (hereinafter CFA) was used to construct the measurement model and to control factor validity. As can be seen from Table A2, statements reflecting the antecedents measure the different aspects of activities before the internship; for example, having a supervisor from the university as well as from the company, including the objectives and tasks set before the internship, etc. (for the full list of statements belonging to each of the factors, see Table A2). During the refinement process (where statements with low loadings were eliminated from the model), it became clear that none of the factors describing antecedents had validity of the required level and therefore, no factors were built on the antecedents side of the model. However, these statements were used as separate observed variables in the second step of the SEM. The only statement left out of the model was “I actively searched for my internship”, because it was too similar to the following statement: “I searched for a company where I would like to work in the future”. The second statement was kept in the model, because it resulted in better model fit indices.

For the processes, we created three factors as specified in literature review. One reflected the role of the supervisor from the company. The second consisted of the characteristics describing the internship (for example, whether the internship was interesting and challenging, whether it provided possibilities to develop knowledge and skills). The last construct related to whether or not the internship process reflects the knowledge and skills gained during university studies and if they could be implemented in the workplace. During the refinement of the CFA, it was seen that the second factor reflecting the internship characteristics did not work. The statements included in this factor were not correlated highly enough to form a construct, shown by the extracted low values of average variance and reliability.

The outcome of the internship was measured with 11 statements (see the list in Table A2); these were all included in the factor of the outcome. After refinement, five of these statements remained in the model and formed the outcome variable. The statements were for example about communication and cooperation skills, but also more general statements about how the understanding of necessary skills has been changed for the intern, and what is needed to cope with labour market demand in the future (see Table 3).

4. Findings

Looking at how the antecedents, processes and outcomes were evaluated by the respondents shows that the antecedents have lower average ratings compared to the other two parts of the internship (Table A3). In the case of antecedents, statements related to the supervisor from the company, to the active role of students in the process of searching for the company and to having a personal objective were most commonly agreed with. A lower level of agreement was seen for the following statements: “I had a supervisor from the university”, “I had enough knowledge and skills from my university studies” and “We agreed with the company on my objective and tasks”.

Concerning the process of internship, the statement reflecting whether the internship was interesting and challenging had the highest average evaluation from respondents. At the same time, supervisor’s feedback, additional opportunities at the company, ideas provided by the student at the company and the opportunity to implement knowledge gained from the university were the statements that received a lower level evaluation.

From outcomes, the following statements were highly agreed with: “I had a real working experience”, “I understood which knowledge and skills related to my field of study need further development”, “Gained experience raised my self-confidence”. Outcomes related to digital savviness, time planning and coping on the labour market in the future got the lowest evaluations.

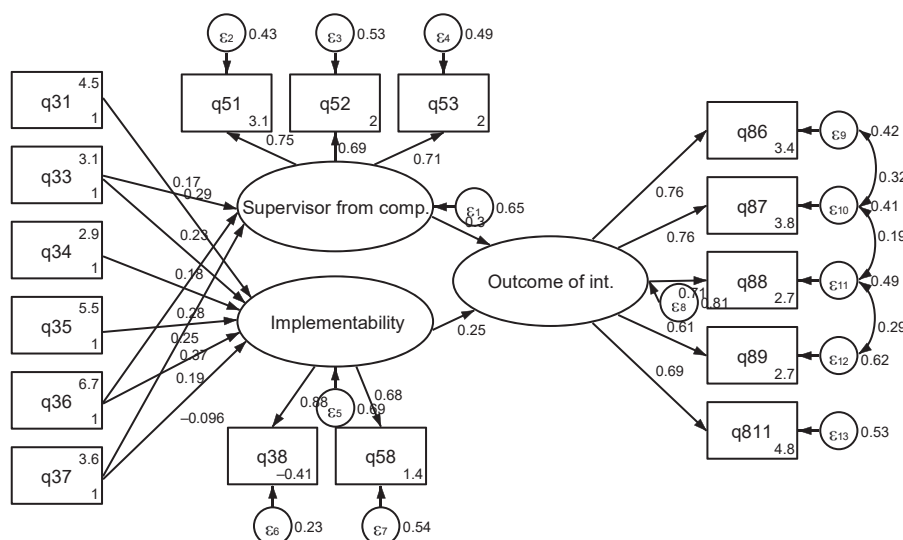
Table 3.
The measurement
model for the process
and the outcome of the
internship

Factors	Observed variable	Factor loading
Supervisor from the company	I received constructive feedback from the supervisor at the company (q51)	0.75
	We discussed my internship tasks with the supervisor at the company (q52)	0.69
	The supervisor's feedback helped me to understand the areas in which I need to develop my knowledge and skills (q53)	0.71
AVE of the factor 0.52, reliability of the factor 0.76		
Implementability of knowledge	I had enough knowledge and skills from my university studies (incl. my specialisation) to go to the internship (q38)	0.88
	I managed to implement what I learnt from university (q58)	0.68
AVE of the factor 0.62, reliability of the factor 0.76		
Outcomes	My cooperation skills developed (q86)	0.76
	My communication skills developed (q87)	0.76
	My internship made me more independent (q88)	0.71
	Gained knowledge and skills that will help me in the labour market in the future (q89)	0.61
	I gained knowledge and skills to manage new situations (q811)	0.69
AVE of the factor 0.50, reliability of the factor 0.83		
Source(s): Created by the authors		

After refining the CFA, all the factors that were kept in the final model showed convergent and discriminant validity at an acceptable level. Also, the model fit indices show a good fit (see [Table 3](#)). In the final model, there were 115 observations, due to some missing values for some of the statements.

In the SEM, the hypotheses shown in [Figure 2](#) were tested. The structural model itself showed a good model fit: χ^2 ratio = 1.23, p -value = 0.075, RMSEA = 0.045, TLI = 0.95, CFI = 0.96. The results of the structural model are shown in [Figure 3](#). The structural model revealed that all the statements included as indicators of antecedents were significantly, and in a positive way, related to the internship process (see [Table A4](#) for the results of hypothesis testing). The antecedents that were significant to process factors were related to the existence of a supervisor from the company, agreement about objectives and tasks with the company and having an internship in a company where student would like to work in the future (this effect goes through the process factor “Supervisor from the company”). Other antecedents that were related to the university supervisor and instructions given by the university affect the process factor “Implementability”. However, it must be noted that the antecedents that were important for the “Supervisor of the company”, were also important for “Implementability”. Hence, our analysis demonstrates that the effects of antecedents are transferred via different process factors to the outcome.

Based on our model, we can claim that the internship process can be attributed to two factors: “Supervisor from the company” and “Implementability”. Whilst the importance of the feedback given from the supervisor has been acknowledged before in the literature (see, for example, [Yoo and Morris, 2015](#); [Neelam et al., 2019](#); [To and Lung, 2020](#)), the other factor our model revealed (“Implementability”) has not been so clearly emphasised by previous studies. The content of the factor is related to how university has prepared students. However, the emphasis is not on specific skills or knowledge that has been taught to students, but rather how the internship process enables them to apply this knowledge in practice. This has also been suggested by [Nghia and Duyen \(2018\)](#), who demonstrated changes in attitude during an internship. The third factor (which we included in the initial model as a process factor) the



Source(s): Created by the author

Figure 3.
The relationships
between antecedents,
process and outcome of
the internship

“characteristics of internship” was about the length of an internship, but also about the self-initiative of students during their internship (whether the intern offered ideas to solve problems and whether complementary opportunities were offered). This was not significant in the model, and was removed. Hence, the initiative behaviour was an antecedent factor (as also suggested in [Narayanan et al., 2010](#)) and not as a process factor (as suggested by [Jaradat, 2017](#); [To and Lung, 2020](#)).

Both “Supervisor from the company” ($p < 0.01$) and “Implementability” ($p < 0.05$) were positively related to the factor “Outcomes”. This means that the activities of the supervisor from the internship (including giving feedback to the students, discussing the tasks of the internship) are important for gaining and developing the skills and knowledge that influence the success of the internship. The significance of implementability shows that if students manage to implement what they have learnt at university, the outcome of the internship in terms of competency development will also be at a higher level. The outcomes that were statistically significant in our model were more related to general skills (also highlighted by [della Volpe, 2017](#); [Chen et al., 2018](#); [Kapareliotis et al., 2019](#)), but also skills which are related to managing new situations, which is considered one of central elements of competency ([Fuchs, 2022](#)). As the world and labour market is changing very quickly, the students have to be ready for career changes and be able to adapt to new situations.

5. Discussion

Internship is increasingly acknowledged as an essential part of higher education studies, but there is limited knowledge about what influences its effectiveness. Although internship effectiveness studies commonly measure the outcome as student’s satisfaction ([Paulins, 2008](#); [Yoo and Morris, 2015](#); [Bhattacharya and Neelam, 2018](#); [To and Lung, 2020](#); [Kroon and Franco, 2022](#)), in our study we have concentrated on the outcome as competency development. Our model demonstrates that it can be measured as the internship’s outcome and we highlight the process of how it is formed.

Antecedents like the clarity of instructions and the choice and objective of the internship have been highlighted as important in previous studies (e.g. [Maertz et al., 2014](#); [Sosland and Lowenthal, 2017](#)), but our model shows how these make an impact through internship processes. Some of them have an effect through the implementability of knowledge, and some through the role of the internship supervisor. Antecedents that are related to the implementability of knowledge, are the contribution of the university (through giving clear instructions and providing a supervisor) and the contribution of students (through searching for the company and setting personal objectives and tasks before the internship). Implementability, as a part of the internship process, has an important role in giving meaning to the skills and knowledge learnt at the university. The knowledge gained in university has typically been classified as antecedent in the internship model ([Narayanan et al., 2010](#)) and some studies have found that academic performance is not related to the internship outcome ([Neelam et al., 2019](#)). It has also been claimed that what students learn from school might seem irrelevant for them in the workplace ([Zehr and Korte, 2020](#)). Our model demonstrates that academic preparedness is actually part of the process, as only via practical work experience does this knowledge take on actual meaning for the student. That is why it is of crucial importance to have study-related internship courses in the higher education curricula.

Some previous studies have illustrated that for a better internship outcome, the internship should be extended (e.g. [Vadi et al., 2013](#); [Jackling and Natoli, 2015](#)), the tasks should be varied ([Bhattacharya and Neelam, 2018](#)) and clear ([Kapareliotis et al., 2019](#)). In our study, we could not create a solid factor of task characteristics to affect the outcome of the internship. One possible reason could be that the other factors we created capture this effect. For example, task variety and length in themselves do not determine the outcome, but the supervisor (whether he/she notices the actions of the intern and provides subsequent challenging tasks) and implementability of knowledge (the intern understands the process and how to apply the knowledge they have gained at the university) are crucial. Although there is no doubt that the duration of the internship as well as task clarity and variety are important, our results demonstrate the importance of active interaction and relevant changes that are made during internship, in cooperation with the supervisor. The role of the supervisor, both from the university and the company, has been emphasised in previous studies ([Yoo and Morris, 2015](#); [Neelam et al., 2019](#); [To and Lung, 2020](#)). Our study has revealed the process of how a supervisor affects an internship's outcome and that it is different for the university and the company supervisor.

In addition to the theoretical implications discussed above, there are also several practical implications deriving from our analysis. The role of students in taking the initiative and actively searching for a suitable internship is very important and leads to a better outcome. The university should support them in this search and counsel them during the process, as the clarity of instructions given and the existence of a supervisor from the university also leads to a better outcome. In addition, the role of a supervisor in the company should be acknowledged more by all parties. It is not just about a supervisor being in place, but about constant interaction between the parties, giving constructive feedback and making changes if necessary.

Our analysis has demonstrated that when the internship's antecedents and processes are of a higher level, there will be higher level of outcome in terms of competency development. Furthermore, our model emphasises the importance of the process and its interactive nature: it is only through the internship process that the intern understands the applicability of the knowledge gained from the university. The whole process is supported by the constructive feedback given by the supervisor from the company. As a result, the competency of interns is improved and contributes to the employability of the student.

This research could have practical value to universities that would like to monitor internship feedback. This internship questionnaire has been developed based on academic literature, and has been tested by students from different disciplines. As demonstrated by our study, the questionnaire is applicable regardless of the field of study. The main limitation of our study is that the survey was conducted when the coronavirus pandemic affected students' choices and opportunities to do internships. Hence, it would be advisable to conduct the survey again. In addition, we have data from Estonia, hence generalisations to other countries should be done cautiously. At the same time, our survey also included responses from foreign students studying at the University of Tartu, who very often do their internship abroad. Nevertheless, the vast majority of responses are about internships done in Estonia. The data we use is surveys filled out by students themselves, hence we rely on their self-assessment.

In further research, it would be worthwhile to study whether there are differences by discipline in the factors that affect the outcomes of internships. In addition, it could be explored whether differences between paid and unpaid internships appear. Although there are some studies focussing on these issues, they do not use the model of antecedents and processes as we did in our study. In addition, greater emphasis should be placed on researching how challenging an internship is and how this could affect the model. This questionnaire will be further used at the University of Tartu to monitor internship feedback from its students and develop the internship system further. At the same time, it would be very interesting if the same questionnaire were to be used by another university in a different cultural context, and to what extent the factors affecting the internship process would be the same or different.

6. Conclusion

This study investigated the factors that affect internship outcomes, measured in terms of competency development. We were able to define antecedents that influence the outcomes of the internship, like the choice and objective of the internship, the clarity of instructions and the university supervisor. However, these all affect the outcome by process factors, i.e. they only start making sense if there is relevant support from the supervisor at the company and when an intern can apply the knowledge and skills that have been studied at university. Our model demonstrates that academic preparedness has an effect on internship outcomes, but only through real-life experience in the workplace is meaning transferred. This means internship is a very important part of the higher education curriculum. The role of students in taking the initiative and actively searching for a suitable internship leads to a better outcome, and universities should support students by counselling.

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Factors affecting internship outcome listed in literature	Classification used in our model	
Task clarity	Clarity of instructions (items related to clear instructions, supervisor presence before internship)	Antecedents
Internship planning		
Presence of supervisor	Choice of internship (student's active role in the search process)	
Student initiative in search for the company or internship		
Self-initiative		
Well-defined responsibilities	Objective of internship (agreed objective and tasks)	
Autonomy		
Student knows what is expected		
Feedback given	Supervisor from the company (feedback during internship)	Processes
Perceived supervisor support		
Helpful feedback		
Company communication		
Self-initiative behaviour	Characteristics of internship (internship length, interesting internship, complementary possibilities to develop)	
Taking initiative		
Project understanding and interest		
Reasonable conduct		
Internship relevancy	Implementability (implementing what was learnt at university)	
Educational training		
Skills obtained from education		
Cross-skills, general skills, critical thinking, teamwork, problem solving, IT skills, computer skills, communication skills, professional skills, interpersonal skills and technical skills	Skills related to communication, cooperation, time management, digital skills, etc.	Outcomes

Source(s): Created by the authors

Table A1.
Classification of factors

	Factor	Observed variable
Antecedents	Clarity of instructions	I received clear instructions from the university for my internship (q31)
		When I started the internship, I had a supervisor at the university (q34)
		When I started the internship, I had a supervisor at the company (q36)
	The choice of the internship	I actively searched for my internship (q32)
		I searched for the company where I would like to work in the future (q33)
	The objective of the internship	I had a personal objective and tasks when I started my internship (q35)
		At the beginning of my internship, we agreed on my objective and tasks with the company (q37)
	Processes	I received constructive feedback from the supervisor at the company (q51)
		We discussed my internship tasks with the supervisor at the company (q52)
		The supervisor's feedback helped me to understand the areas in which I need to develop my knowledge and skills (q53)
	Characteristics of the internship	My internship was long enough to fulfil the objective and tasks (q54)
		My internship was interesting and challenging (q55)
		I was offered complementary possibilities to develop my knowledge and skills (q56)
	Implementability	I offered ideas to solve practical problems (q57)
		I had enough knowledge and skills from my university studies (including my specialisation) to go to the internship (q38)
		I managed to implement what I learnt at university (q58)
	Outcomes	I had a real working experience (q81)
		I understood which knowledge and skills related to my field of study need further development (q82)
		The achieved tasks supported my development (q83)
		The gained experience raised my self-confidence (q84)
		I learnt better time management (q85)
		My cooperation skills developed (q86)
		My communication skills developed (q87)
		My internship made me more independent (q88)
		The gained knowledge and skills will help me in the labour market in the future (q89)
		I developed digital skills related to my field of study (q810)
		I gained knowledge and skills to manage new situations (q811)

Table A2.
Questions used in the survey

Source(s): Created by the authors

Table A3.
Descriptive statistics

	Mean	Standard deviation
I received clear instructions from the university for my internship (q31)	3.27	0.80
I searched for a company where I would like to work in the future (q33)	3.10	1.02
When I started the internship, I had a supervisor at the university (q34)	3.16	1.15
I had a personal objective and tasks when I started my internship (q35)	3.49	0.65
When I started the internship, I had a supervisor at the company (q36)	3.78	0.57
At the beginning of my internship, we agreed on my objective and tasks with the company (q37)	3.29	0.88
I had enough knowledge and skills from my university studies (incl. my specialisation) to go to the internship (q38)	3.16	0.84
I received constructive feedback from the supervisor at the company (q51)	3.51	0.68
We discussed my internship tasks with the supervisor at the company (q52)	3.49	0.75
The supervisor's feedback helped me to understand the areas in which I need to develop my knowledge and skills (q53)	3.36	0.77
I managed to implement what I learnt at the university (q58)	3.44	0.78
My cooperation skills developed (q86)	3.43	0.72
My communication skills developed (q87)	3.51	0.67
My internship made me more independent (q88)	3.41	0.80
The gained knowledge and skills will help me in the labour market in the future (q89)	3.28	0.78
I gained knowledge and skills to manage new situations (q811)	3.56	0.56

Source(s): Created by the authors**Table A4.**
The results of
hypotheses testing

Hypotheses	The result
H1: The clarity of instructions is positively related to the activities of the supervisor from the company	Supported ($q36 \, p < 0.01$)
H2: The clarity of instructions is positively related to the characteristics of the internship	The characteristics of the internship was removed from the model
H3: The clarity of instructions is positively related to the implementability of knowledge	Supported ($q31 \, p < 0.01$; $q34 \, p < 0.1$; $q36 \, p < 0.1$)
H4: The choice of the internship is positively related to the activities of the supervisor from the company	Supported ($q33 \, p < 0.1$)
H5: The choice of the internship is positively related to the characteristics of the internship	The characteristics of the internship was removed from the model
H6: The choice of the internship is positively related to the implementability of knowledge	Supported ($q33 \, p < 0.05$)
H7: The objective of the internship is positively related to the activities of the supervisor from the company	Supported ($q37 \, p < 0.01$)
H8: The objective of the internship is positively related to the characteristics of the internship	The characteristics of the internship was removed from the model
H9: The objective of the internship is positively related to the implementability of knowledge	Supported ($q35 \, p < 0.05$)
H10: The activities of the supervisor from the company are positively related to the outcome of the internship	Not supported ($q37 \, p > 0.1$)
H11: The characteristics of the internship are positively related to the outcome of the internship	Supported ($p < 0.01$)
H12: The implementability of knowledge is positively related to the outcome of the internship	The characteristics of the internship was removed from the model
Source(s): Created by the authors	Supported ($p < 0.05$)